364 garbage was customarily fed to animals. As previously reported (Hauck, 1956) "Each family seemed to have its own pattern for disposal of garbage which was not fed to stock. Those who threw it in the canal, did so consistently, except when the nearby canal was dry, and those who threw garbage elsewhere, did this consistently. No one was observed to burn or bury garbage."

The Kitchen Area

354 In the larger houses, the kitchen was usually a small separate room with a wooden floor and at least one window for ventilation. A low table or wooden case with sides built up several inches, and filled with clay, served as the "fireplace." On this stood the clay stove, and hot pans and pots were set there when removed from the fire. In homes with an earthen floor, the fireplace might be built directly on the ground. The clay stove was several inches high, shaped so that rice pots and curved frying pans would fit into the large segment of a circle which was its top. An open space was left in front to facilitate building and maintaining the fire. Firewood was kept nearby. Most families also had a portable clay stove in which charcoal was burned. This might be used as an auxiliary unit, for outdoor cooking on a hot day or when traveling by boat.

Matches, although available, were hard to protect from dampness. Kerosene filled cigarette lighters of a cheap and efficient type were commonly used. As kindling, one might use coconut husks or purchase resinous bits of wood that would hold a flame for sometime.

Although only a small amount of firewood was needed, as it was used for cooking only, local supplies were inadequate. In all seasons, some was brought in from other areas. One family participating in the survey planted trees each year for firewood. The wife in another household used to return to her parents' home to gather a boatload of wood as needed. Because charcoal was more expensive than wood, and none was produced in the village, it was used for home cooking by only about 10 per cent of the village families, primarily those such as storekeepers and venders who did not have time to cut firewood.

352 In many kitchens clean dishes were placed upside down on
• 251 a slatted wooden rack. The other common item of furniture was a free standing ventilated cupboard or food safe. At its best, this was screened, and the legs antproofed in some way, as by putting them into small containers partially filled with kerosene, or rubbing them with powdered pitch; but relatively few
251 village families had such well constructed food safes. Families that did not own a food safe often kept leftover cooked foods in a basket, or covered with large dishes on a tray. Fish and sugar must be kept away from ants, but cooked rice,

251 which did not attract them could be left anywhere out of reach of dogs. Raw rice was stored in a large jar or oil can while salt, fermented fish, shrimp paste[1] and fishsoy[1] were kept in smaller jars or bottles. Such containers were customarily covered. Dried food materials such as onions, garlic, chili peppers and other seasonings were often kept in a basket hung from the roof. Paddy, i.e. unhusked rice, was kept in a large bin of matting or wood, the excess sometimes simply piled on an uncovered mat on the floor.

128 Descriptions of two kitchens, one in a relatively prosperous household and one in a poorer home in Bang Chan, are included in excerpts from field notes, Appendix A, p. 93.

312 In a few homes, a clay water jar was kept in the kitchen or nearby, but more frequently foods were washed, and cooking water obtained at the canal or fish pond.

The water level varied between heavy flood and threatened drought. There were no deep wells in the whole area. Rainwater was collected from the roofs and stored in jars, but during the dry season, the canal or fishpond, although low, must supply the needs of the household. In some, drinking water drawn from the fishpond was preferred, and an effort might be made to keep buffalo from wallowing in it, and to avoid contaminating it with fecal or food wastes or by bathing. Others considered the moving water of the canal preferable to pond water.

General Social Factors Affecting Nutritional Level

462 In Bang Chan, most farm and household tasks were shared by men and women. Both sexes plowed, planted, harvested and dealt with rice buyers; managed buffaloes, boats, and children; cooked, fished and cut wood for fuel; hired out as labor hands, "living in" if desired.

554 Though there were clear differences in socio-economic status, the daily life of the people was much alike: whether owners of land or renters, whether farming large or small acreages, the rich and the poor worked in the fields at the same tasks, produced or gathered much of their sustenance, and ran out of cash periodically. Socio-economic status was roughly defined in terms of food: a poor man "had one meal only to forego another;" a rich man "had or could get what he wanted to eat." (Sharp et al. 1953, p. 264.)

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1. Description of these products will be found on pp. 17-18.

GENERAL DESCRIPTION OF FAMILY FARE IN BANG CHAN

As we turn to a detailed description of the family fare, we should like to point out that starvation was unknown in Bang Chan. Although much room remains for improvement in diet, "hollow hunger" was uncommon. In the few times when disastrous flood destroyed the year's crop, the government was able to provide enough rice so that it need not be rationed. People still ate their fill. Even floods had their advantage: one could fish out the window. That gross caloric undernutrition was rare was borne out by examination of the school children (Hauck, 1956). "On the average . . . Bang Chan children could not be considered as markedly underweight. Few were so thin that one could 'count their ribs' and still fewer would be considered plump by American standards." In a random sample of village households that included about 10% of the population, the heaviest man weighed 69 kg. (151.8 pounds) and the heaviest woman 70 kg. (154 pounds). We noted no more than half a dozen adults who appeared to be "overweight." Most were middle aged or older, and none of them did strenuous field work.

Sources of Food

Home Production, Storage and Preservation

Rice. - Rice is an essential part of any Thai meal. The majority of the rice farmers in Bang Chan had rice for home consumption milled for them at Minburi. In general, they took their own paddy to the mill, and brought the resulting milled rice home, where it was stored in a box or mat-bin. Although, according to a recent survey (Goldsen and Ralis, 1957) nearly a third of the households owned a home rice mill, undermilled or home-pounded rice was not widely used in Bang Chan. Information on this point was obtained for 333 of 336 "kitchen-unit"[1] households in the village. Of these 5 consumed home-milled rice only, 51 used home-milled rice in major part, 78 in minor part, and 199 not at all.

In households where home-milled rice was used, during June enough would be pounded to last until harvest, at which time hands were sore and bleeding from the field work and home pounding was impossible. At the time when data for the present report were being gathered, most families took paddy to the mill when water in the canal was high enough so that it could be transported by boat. If a farmer on a subsidiary

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1. In some large houses, two related family groups lived together but maintained separate kitchens.

was given away fresh to selected kin and friends, including those who helped to butcher, and the remainder was salted and dried. Of this, 7 kg. were kept and 5 kg. sold. Moslems are forbidden to eat an animal with two or four legs which "dies," although eating dead locusts or fish is not forbidden. Some Moslems in Bang Chan reported offering dead animals to Buddhists in barter for other materials.

Oxen, a sign of prosperity, were bought as calves by the Moslems and fattened for meat, usually with a ceremony in mind. In 1955 (Goldsen and Ralis, 1957) only 5 householders in Bang Chan raised hogs, and 4 of these had 1 or 2 only. Moslems ate no pork. A permit from the district officer was necessary for slaughtering a buffalo or an ox but not for hogs. Natural deaths of such animals were supposed to be reported.

Poultry was not commonly used for food in Bang Chan. It was the poor man's "feast" food suitable for guests. One couple in the lowest income level killed one chicken or a duck once a year to provide the traditionally good meal for their cooperative harvest helpers. Others, better off, might serve chicken especially at men's dinners. Pigeons were raised for sale in the market by one Moslem family. In 1953-54, one person was trying to raise a few turkeys for sale, as word had reached Bang Chan that turkeys were in demand for foreigners' holiday dinners. By 1957 turkey-raising for cash was spreading, but some villagers objected to having them around "because they look like vultures and bring misfortune."

Various wild creatures were used for food whenever they were caught. Turtle curry was considered a great delicacy, but as turtles, which could be caught from May to February, brought a good price in Bangkok, experts usually sold their catch. Frogs and turtles were sometimes kept in a jar until needed. Eels, frogs, cobra and other snakes were used for curry. Field rats, available all year, were roasted.

Fish. - Next to rice, fish constituted the most abundant food in the diet in Bang Chan. Either fresh or preserved,[1] they were available throughout the year. Killing

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1. According to observation in 1952-54, fish caught in excess of immediate needs were preserved for later use. Serpentheads ((1)plaa (3)chauaun), which are about 7 or 8 inches long, and pilot fish ((1)plaa (2)sa-(2)lid), about 4 or 5 inches long, were commonly salted and dried. Heads and tails were removed and the fish were split open and salted overnight. The following morning the fish were washed and spread on fiber trays in the sun to dry. Some excess fish might be dried at anytime of year, but larger quantities were done during the hot, dry season. The process was usually complete within a week.

Killing
fish was apparently regarded more lightly by many Buddhists than killing of larger animals, but fishing on (1)wan (4)phra, the weekly holy day, was forbidden. Fish were caught from the canal with nets, traps, spears and hooks. Some were trapped in trenches in the rice fields. Techniques varied with the varieties of fish mature and plentiful at different seasons.[1] Moreover, every house had a fish pond. It was usually the hole from which earth had been removed for mounding the home site, and was connected by a ditch to the canal. Fish were lured from the canal into the pond by clearing it of injurious undergrowth, planting appropriate fish-feeding plants, of

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Smaller fish were preserved as fermented fish. The fish with bones left in, were salted overnight. This product was called (1)plaa (1)raa. For fermented fish to be used as seasoning, in various dishes, the liquid was drained off, then the fish were washed and mixed with salt and specially prepared rice. This had been soaked overnight, fried and pounded. The mixture was allowed to ferment in a small jar for from 2 weeks to 2 or 3 months, depending on the product desired. Large bones were removed by putting the product through a colander before use. Fermented fish had the advantage that it could be eaten without further preparation, and the flavor was generally liked.

Small shrimp, which were caught in quantity during only about 3 weeks in February, were made into shrimp paste as follows: the shrimp were washed, mixed with salt and allowed to stand overnight. The liquid was drained off, and the shrimp were spread out on trays and exposed to the sun for a day or so. Larger ones might then be beaten to loosen the shells, which could be winnowed away. For very small shrimp, this step was omitted. The shrimp were then pounded thoroughly in a mortar, and stored in a jar for about a month before use. Very small fish were sometimes made into fish paste in the same way. The yield was about 2 kg. of the tannish or grayish colored shrimp paste from 4 baskets (4/5 tang) of shrimp. Shrimp paste or (2)ka-(2)pi was an essential ingredient of Thai hot dishes.

The liquid which was drained off from the mixture of fish or shrimp and salt in the first stage of preparing fermented fish or shrimp paste was used by some villagers to prepare (4)nam (1)plaa or fishsoy. The liquid was boiled with certain green leaves such as mango leaves, onion, garlic and salt for from 30 minutes to an hour, then it was strained. The resulting red-brown liquid was bottled and was ready for use as a condiment.

1. Sharp et al. (1953, pp. 185-196) described some common fishing techniques and listed 32 varieties of fish known to be found in Bang Chan in 1948-49.

235 Eggs and poultry. - Every household which took part in the survey raised chickens, and 3 of the 11 households had ducks also. In both groups of families, most of the eggs produced were sold. Home consumption of eggs on survey days was small.

228 Fish. - Each family studied had a fish pool. One family only, Household 25 in Group B raised tilapia. They began tilapia culture during the third round of the study, too late to ascertain how this might affect fish consumption in the family.

251 Preservation of Foods at Home. - Home food preservation was practiced to a very limited extent only, fish products being the principal ones produced.

Dried fish. - Families in both groups salted and dried fish throughout the year whenever they were available in excess of immediate needs.

Fermented fish. - In 10 of the 11 households, fermented fish was prepared. The 6 families in Group A had prepared a total of 30 kg., and 4 of the 5 families in Group B, a total of 29 kg. The largest amount prepared in one household, for one year was 10 kg.

Shrimp paste. - Because shrimp were caught in insufficient quantity, shrimp paste was prepared by only 6 of the 11 families. Four families in Group A prepared a total of 26 kg., and 2 families in Group B prepared a total of 7 kg. These amounts were insufficient for their needs.

Fishsoy. - One family only, in Group A, prepared fishsoy. All others in both groups purchased this product.

Buffalo meat. - During the survey year, the buffalo belonging to one family died. Some of the meat was used fresh for curry, and the remainder was salted, dried and sold.

Comparison of Caloric and Nutrient Intakes of the Two Groups With Each Other and With the Estimated Allowances.

128 146 In Table 11, the estimated calories and nutrients available to the two groups of families, are shown together with the estimated allowances.

146 On the average, the number of calories, and amounts of protein, iron, niacin and ascorbic acid in the diets of persons in Group B, the apparently better nourished group, approximated or exceeded the conservative allowances. For Group A, this was true for niacin and ascorbic acid only, the calories being 11%, protein 15% and iron 21% below the allowances.

117 takes it down the steps to the fish pond, where she swishes
252 the basket around to wash the fish, and rinses her hands at the same time.

[231] There are some hazards to the food--chickens trying to get at the edible part of fish while the niece cleans it (she leaves the scales, etc. for them to eat); cat and kittens in the kitchen, having to be driven away from the grated coconut and coconut milk, and getting an occasional unweighed nip. Whether we start to weigh food for the evening meal or a.m. meal, some cooked foods are apt to be used, either left over
[262] from a previous meal, or cooked in advance. This a.m., for
[126] example, buffalo meat, already cooked (but not weighed before cooking) was used, and (3)khii-(2)leg leaves, which SS weighed last night. These latter were cooked last night, to reduce bitterness, then put into curry today.

Description of Food Preparation Area in a Relatively Poor Household

Wednesday, May 27, 1953

117 Arrived about 5:45 a.m. While other food was being pre-
[262] pared, the 11-year old son came in with a package of salted white radish and a small milk tin with some coconut oil which had just been bought. This is the house which we found flooded when they sent for us to see the baby last fall. The roof seems to be well thatched. The floor is not wet after last
[352] night's downpour. The bed platform, in one corner, is about
[354] 8 x 10 feet. The baby's cradle hangs above it. In the oppo-
[352] site corner is a shelf where utensils are kept. Some food,
[25] in paper bags, is in a basket hung from the roof. Fresh fish
[354] is kept in a jar of water until needed. The stove is on a small mound of earth, and further elevated on a small box (just big enough for the stove) filled with earth.

[352] We sit on a mat, spread on the mud floor, with the
[355] scales, plastic bowls and waxed paper ready for weighing food. The children lie on a mat nearby. In the house is a fresh mound of earth, a small straw bin with rice, and various pieces of equipment.

Equipment Used For Food Preparation

252 Equipment used for food preparation by 11 families par-
41 ticipating in the dietary study: clay stove; pots and covers
[251] of clay, light weight aluminum, and enameled iron; frying pans, curved, of sheet iron, with home-made wooden handle on one side, or metal handles on opposite sides (shallow clay pans were also used for frying); basins, pails, chopping boards; grater for coconut: a metal, toothed instrument mounted on one end of a low wooden stool (often called a "wooden rabbit" because the seat of the stool might be shaped like a rabbit); mortar of pottery or stone; wooden pestle; fiber strainers usually with rigid handles, to hold them in place on top of a pot; a large-bladed all-purpose knife; in some households, one or more smaller knives; metal turner, with home-made wooden handle; spoons, with bowls of coconut shell, gourd or wood; tin cans for dipping, measuring rice, etc.; fiber trays used for winnowing rice, for drying food, storing dried chilies, onions, etc.; metal tray for serving food to priests, and for household use; baskets for storing food; (5)faa-(1)chii, or fiber cover, to keep flies and insects off cooked food; large earthenware water jars.

[184] Other items less often used, and owned by relatively few families in Bang Chan, included: steamer; a perforated clay pot or metal pan with cover, designed to fit tightly into another pot in which water was boiled; large wooden mortar, made of a hollowed tree trunk; spring-type egg beater (a strong spiral spring attached to a stick); scale; glass water jars.

Equipment Used in Serving Food and Eating

264 The equipment for serving and eating food might include:
412 flat bottomed bowls with a deep edge, similar to Western-
415 style soup plates, used as individual rice bowls; plates; small bowls for "with-rice" dishes; sauce dishes with stand, for chili sauce; enameled iron or china spoons (Chinese type) used for serving moist foods; forks, used by some families on special occasions;[1] teapot and cups; large rice bowl for ceremonial use (silver or aluminum); large brass spoon with serpent-tail handle, for serving rice; drinking glasses; tiered lunch pail; canteen; thermos bottle.

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1. A relatively poor family (Sharp et al. 1953, p. 223) had one pair of fork and spoon for eating.

BANG CHAN

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Sanitation

364 Disposal of Garbage. - Of the 6 categories for disposal of garbage listed on the schedule (Appendix A), 3 only were used by the families who took part in the dietary study (Table 18).

Table 18

Disposal of Garbage in 11 Households, Bang Chan

	Number of Families Using Each Method			
Round[1] of dietary study	I	II	III	IV
[231] Garbage fed to animals	10	10	10	10
Garbage thrown into canal	2	6	3	4
Garbage thrown elsewhere	5	5	5	5

1. Each family was visited 4 times during the year. Each series of visits to the 11 households was called a round.

Ten of the 11 families fed some garbage to animals, and for 4 families, on 10 survey days, (i.e. 1 to 4 days per family), this was the only manner of garbage disposal. One family had no animals other than chickens, and these were not fed garbage on the survey days.

Each family seemed to have its own pattern for disposal of garbage which was not fed to stock. Those who threw it in the canal, did so consistently, except when the nearby canal was dry, and those who threw garbage elsewhere, did this consistently. No one was observed to burn or bury garbage.

• 251 Protection of Food From Contamination by Insects and Other Animals. - Large oil tins, with covers, were commonly used to store dry rice and other non-perishable foods in the kitchen area. One family covered the container with a plate.

In 8 of the 11 households of the dietary study some provision was made for storage of left-over and perishable foods. None of the households had screened cupboards, but two used some means to ant-proof the legs of the cupboard such as rubbing them with powdered pitch, or setting them in bowls of water.

A 2 [see p. 63 - Analyst]

251 One family stored cooked food in a basket which was hung from the ceiling. One homemaker frequently covered such foods with a basket, and in one instance a homemaker, who usually took no precautions to protect cooked foods, used a basin to cover food left on a table.

271 312 Source and Treatment of Water For Drinking and Culinary Purposes. - From the time the dietary survey was begun, on May 26, 1953, through January 18, 1954, all families used rain water for drinking.

Of the 14 survey days, spaced at about weekly intervals, between January 28, 1954 through May 8, 1954, canal water was used for drinking on 7 days, water from fish ponds on 4, and rain water on 3 days. No distinction was made in source of drinking water for children and adults.

312 744 [846] All families used canal water for washing vegetables, cooking, and washing dishes, on the survey days from May 26, 1953 through March 18, 1954. On the 6 survey days between March 24 and May 8, 1954, 4 families used water from the fish pond for these purposes. In no instance was the water treated in any way before being used, although alum is known to be used, at times, in the village, to settle or clear water, and boiled water is given mothers and infants to drink during the post partum rest period.

514 Disposal of Excreta. - Of 30 families from whom information was obtained, 20 had pits for toilet use, only one of which was equipped with a cover. One other family had a flush latrine. Of the 8 families who had no special place which was used for toilet purposes, 4 reported that family members urinated on the compound, 3 that they used the fields, and 1 that either compound or field might be used for urination. One reported that the compound was used for defecation as well as urination; the remaining 7 said they went to the field to defecate.

Six families with pit latrines covered feces in some way: 3 used earth, 2 ashes, and 1 either earth or ash. A majority of those who used either an uncovered pit or had no designated place, reported that no attempt was made to cover feces. From six families, no information was obtained on this point. Various materials were mentioned as being used in the manner in which western peoples use toilet paper. Cocoanut husks were mentioned most frequently (25 times), and other materials in this order: paper (newspaper 9 times, straw paper once), wood (4 times) and water (3 times).

From the information available, custom and convenience rather than sanitary considerations appear to determine practices that are followed. If improved practices are